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PETITION FEE
Under 37 CFR 1.17(f), (g) & (h)

TRANSMITTAL

(Fees are subject to annual revision)

Send completed form to: Commissioner for Patents
P.O. Box 1450, Alexandria, VA 22313-1450

Application Number	10/628,516
Filing Date	July 29, 2003
First Named Inventor	M. KITSUREGAWA, et al
Art Unit	
Examiner Name	
Attorney Docket Number	500.42993X00

Enclosed is a petition filed under 37 CFR §1.102(d) that requires a processing fee (37 CFR 1.17(f), (g), or (h)). Payment of \$ 130.00 is enclosed.

This form should be included with the above-mentioned petition and faxed or mailed to the Office using the appropriate Mail Stop (e.g., Mail Stop Petition), if applicable. For transmittal of processing fees under 37 CFR 1.17(i), see form PTO/SB/17i.

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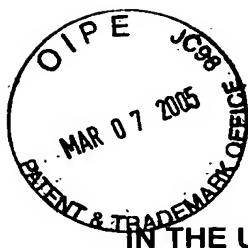
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Petition Fees under 37 CFR 1.17(f):	Fee \$400	Fee Code 1462
For petitions filed under: § 1.53(e) - to accord a filing date. § 1.57(a) - to according a filing date. § 1.182 - for decision on a question not specifically provided for. § 1.183 - to suspend the rules. § 1.378(e) for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in an expired patent. § 1.741(b) - to accord a filing date to an application under §1.740 for extension of a patent term.		
Petition Fees under 37 CFR 1.17(g):	Fee \$200	Fee code 1463
For petitions filed under: §1.12 - for access to an assignment record. §1.14 - for access to an application. §1.47 - for filing by other than all the inventors or a person not the inventor. §1.59 - for expungement of information. §1.103(a) - to suspend action in an application. §1.136(b) - for review of a request for extension of time when the provisions of section 1.136(a) are not available. §1.295 - for review of refusal to publish a statutory invention registration. §1.296 - to withdraw a request for publication of a statutory invention registration filed on or after the date the notice of intent to publish issued. §1.377 - for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of a patent. §1.550(c) - for patent owner requests for extension of time in <u>ex parte</u> reexamination proceedings. §1.956 - for patent owner requests for extension of time in <u>inter partes</u> reexamination proceedings. § 5.12 - for expedited handling of a foreign filing license. § 5.15 - for changing the scope of a license. § 5.25 - for retroactive license.		
Petition Fees under 37 CFR 1.17(h):	Fee \$130	Fee Code 1464
For petitions filed under: §1.19(g) - to request documents in a form other than that provided in this part. §1.84 - for accepting color drawings or photographs. §1.91 - for entry of a model or exhibit. §1.102(d) - to make an application special. §1.138(c) - to expressly abandon an application to avoid publication. §1.313 - to withdraw an application from issue. §1.314 - to defer issuance of a patent.		

Name (Print/Type)	Carl I. Brundidge	Registration No. (Attorney/Agent)	29,621
Signature		Date	March 7, 2005

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.



500.42993X00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Masaru KITSUREGAWA et al.

Serial No.: 10/628,516

Filed: July 29, 2003

For: DISASTER RECOVERY PROCESSING METHOD AND APPARATUS
AND STORAGE UNIT FOR THE SAME

**PETITION TO MAKE SPECIAL
UNDER 37 CFR 1.102(d) and MPEP. §708.02, VIII**

MS Petition

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

March 7, 2005

Sir:

1. Petition

Applicants hereby petition to make this application **Special**, in accordance with 37 CFR §1.102(d) and MPEP 708.02, VIII. The present invention is a new application filed in the United States Patent and Trademark Office on July 29, 2003 and as such has not received any examination by the Examiner.

2. Claims

Applicants hereby represent that all the claims in the present application are directed to a single invention. If upon examination it is determined that all the claims presented are not directed to a single invention, Applicants will make an election without traverse as a prerequisite to the granting of special status.

3. Search

Applicants hereby submit that a pre-examination search has been made by a professional searcher in the following classes and subclasses:

<u>Class</u>	<u>Subclass</u>	<u>Description</u>
707/		DATA PROCESSING: DATABASE AND FILE MANAGEMENT OR DATA STRUCTURES
	100	
	102	
	200	
	202	..Recoverability
	204	..Archiving or backup
711/		ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: MEMORY
	118	
	141	...Coherency
	161	..Archiving
	162	...Backup
714/		ERROR DETECTION/CORRECTION AND FAULT DETECTION/RECOVERY
	2	..Fault recovery
	5Of memory or peripheral subsystem
	15	
	16	

4. Copy of References

A listing of all references found by the professional searcher is provided on a Form PTO-1449 and copies of the references and the Form PTO-1449 are submitted as part of an Information Disclosure Statement (IDS) filed on even date.

5. Detailed Discussion of the References and Distinctions Between the References and the Claims

Below is a discussion of the references uncovered by the search and cited in the IDS filed on even date that appear to be most closely related to the subject matter

encompassed by the claims of the present application, and which discussion particularly points out how Applicants' claimed subject matter is distinguishable over those references. All other references uncovered by the search and cited in the IDS filed on even date are **not** treated in detail herein.

a. Detailed Discussion of the References

Masuda (U.S. Patent No. 6,226,651 B1) provides for a Database Disaster Remote Site Recovery. Discussed is storage manager 104, which may maintain log 105 within server database 106 listing the files stored within primary storage pool 110. Storage manager 104 may update log 105 of server database 106 to catalog the recovery copy of a client file. A remote site server 200 may also include controller 202 and recovery log 204. Controller 202 may decide which of the off-site storage volumes 220 and respective recovery logs will receive updated data. As updated data is received, controller 202 appears to update recovery log 204, which may act as an index for the data records being maintained on remote storage pool 220 volumes. See column 5, lines 1-5 and lines 22-24.

Carteau (U.S. Patent No. 6,606,694 B2) provides for Write Logging in Mirrored Disk Subsystems. Discussed is a portion of log 74, wherein records stored in log file 77 appear to be mirrored to secondary database 72. Shown in figure 8 is a method where the pointer and length information appear to be separated from the actual database information that is to be mirrored. The log file pointer buffer 76 appears to also contain information required to identify where the data to be mirrored will be stored in secondary database 72, and where the data to be mirrored is stored in log file data file 77. (See column 6, lines 59-66; and column 7 lines 30-32, lines 33-36, and lines 41-45).

Wiss (U.S. Patent Application Publication No. 2004/0098425 A1) provides for a Database System Providing Improved Methods for Data Replication. Disclosed is a replication solution in which disk mirroring technology is combined with logical replication so that no database operations are lost if the primary database stops working. In the event that a primary database stops working, logical replication may continue to be applied to the replicate database based on transactions in the mirrored primary database transaction log enabling all of the database operations applied to the primary database to be applied to the replicate database. Primary database 311 appears to employ a logging system to log changes, which may occur to the system. At standby server 330, log reader module 334 may operate to reconstruct the transactions against the primary database for application to replicate database 338 from the log records of primary log 332. (See figure 3 and paragraphs 54, 55).

Pruet (U.S. Patent Application Publication No. 2004/0158588 A1) provides for an Apparatus and Method for Coordinating Logical Data Replication with Highly Available Data Replication. Discussed are log records that appear to be transferred from primary server log buffer 72 to primary server log file 70 and also copied to primary-side buffer 74 of the highly available data replication component 26. Contents of primary side-buffer 74 may be transmitted to secondary server 22 and temporarily stored in secondary-side buffer 80. Secondary server-side component 82 may apply the logged transactions to the mirror database on secondary server 22 and may log the applied transactions in secondary server log file 84. After transactions are applied and logged, an acknowledgement appears to be transmitted to primary server 20 and control structure 86 of the highly available data replication 26 which is then updated with the most recent log position of primary server log file 70. (See figures 1 and 4 and

paragraph 41).

Demers (U.S. Patent No. 5,781,912) discloses recoverable data replication between source site and destination site without distributed transactions. The changes are sent to the destination site. The changes are applied at the destination site. If the changes are successfully applied before the failure, then the changes are made permanent at the destination site and a record is added to a set of records at the destination site. The record indicates that the changes were made permanent at the destination site. After a failure, the set of records at the destination site are used to determine which changes must be sent from the source site to the destination site after the failure. (See, col. 3, line 18).

Parker (U.S. Patent No. 6,178,427) discloses a method of mirroring log datasets using both log file data and live log data including gaps between the two data logs. A mirroring transaction processing task is started on each of a local and a remote site. A user request to initiate mirroring of log datasets is sent to the remote task. In response, the remote task obtains information from the local DBMS to determine the size of the new log datasets which are to mirror the original log datasets and allocates the new datasets accordingly. The remote task then requests both archived and active log data from the local DBMS. Upon receiving the requested log data, the remote task passes the log data to a formatting routine in which the raw log data is written, for example, to a new DB2 log dataset or to a proprietary dataset. If there is a gap in the log data, then gap recovery is performed. If there is an error in writing log data to the dataset, the remote task determines whether a new dataset is needed, and if so, defines the new dataset and rewrites the log data into the new dataset. (See, col. 1, line 63).

Parker (U.S. Patent No. 5,289,357) discloses a method of automatically

synchronizing mirrored database objects. The method automatically detects whether a backup database has fallen out of sync with the primary database which the backup database is intended to mirror. In response, a resynchronization process is automatically initiated in which first, the contents of the primary database are written into the backup database. During this update procedure, the starting point for reading a redo log file of the primary database is automatically determined. The redo log file is then read, beginning at the starting point, and the log file entries are applied to the backup database automatically. (See, col. 2, line 25).

Dion (U.S. Patent No. 6,163,856) discloses a method and apparatus for file system disaster recovery. The file servers typically include a cache where file data in active use is maintained until it is written back to the file storage. The software interacts with the cache so that it replicates file system operations only when those operations are actually being written from the cache to the file storage. (See, col. 5, line 42). Also note U.S. Patent No. 6,144,999.

West (U.S. Patent No. 6,446,176) discloses a method and system for transferring data between primary storage and secondary storage using a bridge volume and an internal snapshot copy of the data being transferred. The method includes establishing a link between the primary bridge volume and the secondary bridge volume. The data to be transferred from a primary storage volume to a corresponding secondary storage volume is then copied onto the primary bridge volume by using pointers to the data of the primary storage volume. The copied data is then transferred from the primary bridge volume to the secondary bridge volume over the link. The data is then moved from the secondary bridge volume to the secondary storage volume corresponding to the primary storage volume to put the primary storage

volume and the corresponding second storage volume in synchronization. (See, col. 2, line 55).

Beier (U.S. Patent No. 6,065,018) discloses synchronizing recovery log having time stamp to a remote site for disaster recovery of a primary database having related hierarchical and relational databases. If a disaster strikes the primary site, and recovery of data contained within the database is needed, the remote site recovery logs and databases may be used to recover some or all of the lost data. Based upon a comparison of the time stamp for the last received update record for the hierarchical database and the time stamp for the last received update record for the relational database, the logs are truncated to a common point in time. This truncation synchronizes the recovery logs and is used to generally ensure that the databases once recovered are consistent to a point as close as possible to the point at which the disaster occurred. (See, col. 3, line 14).

Satoh (U.S. Patent No. 5,530,855) discloses replicating a database by the sequential application of hierarchically sorted log records. When a transaction becomes a committed transaction, the redo records for the committed transaction are sorted with redo records from other committed transactions in the work area according to database, block number within a database, offset location within a block, and sequence of occurrence. A plurality of update blocks from a backup database are read into a buffer in the backup system memory. Sorted committed redo records are sequentially applied to corresponding data records in the update blocks. The update blocks are immediately written back to the database after the committed sorted redo records for the update blocks have been applied to the corresponding data records in the update blocks. (See col. 3, line 36).

Lupton (U.S. Patent No. 5,745,674) discloses management units of work on a computer system log. A method of moving records, stored on a recovery log, which are associated with units of work which have waited for a long time is described. Units of work which have waited for a long time, such as those which are in-doubt have their records copied from a recovery log to a secondary log. When the earliest-written record for this in-doubt unit of work has been copied, a new record called a fork record is written on to the recovery log which has two effects: to subtract the log records currently on the recovery log for this unit of work from the recovery log and to refer to the copied records written on the secondary log. The new record achieves this using two pointers, a pointer to point to the most-recently written record on the recovery log for this unit of work and a pointer to point to the most-recently written record on the secondary log for this unit of work. (See abstract).

Kawamura (U.S. Patent Application Publication No. 2004/0139124) discloses a disaster recovery processing method and apparatus and storage unit for the same. The primary host computer converts position information indicated in the log information into physical position information of the primary storage system and then modifies, according to the contents of the log information, data in the database area of the primary storage system indicated by the physical position information thus converted. (See paragraph 19).

b. Distinctions Between the References and the Claims

The present invention as recited in the claims filed are not taught or suggested by any of the above noted references whether taken individually or in combination with each other or in combination with any of the other references now

of record.

The present invention as recited in the claims is directed to a disaster recovery method and apparatus and storage unit in which upon occurrence of a failure in a primary database processing system, database processing is continuously executed by replacing the primary database processing system with a secondary database processing system. This accomplish in the present invention as recited in the claims by judging when an access request is a write request to determine whether or not contents of the write request are log information and performing at least one of first and second converting operations.

The first converting operation converts, when the contents of the write request are the log information, a position information indicated in the log information and to physical position information in the secondary storage using a conversion table indicating a correspondence between logical position information recognized in the database processing on the side of the computer and physical position information in the secondary storage unit and modifying, according to the contents of the log information data in a database area of the secondary storage unit represented by the physical position information converted using the conversion table.

The second converting operation converts, when the contents of the write request are the log information, position information indicated in the log information into physical information in the primary storage using a conversion table indicating a correspondence between logical position information recognized in the database on a side of the computer and physical position information in the primary storage unit and modifying, according to the contents of the log information, data in a database area of the primary storage unit represented by the physical position information

using the conversion table.

All of the independent claims recite at least the above described features of the present invention with the exception being that some of the independent claims recite only one of the converting operations whereas others of the independent claims recite both of the converting operations.

The above described features of the present invention are not taught or suggested by any of the references of record particularly Masuda, Carteau, Wiss, Pruet, Demers, Parker '427, Parker '357, Dion, West, Beier, Satoh, Lupton or Kawamura whether taken individually or in combination with each other. Particularly, none of these references teach or suggest the above described features of the present invention as recited in each of the claims regarding the first and/or second converting operations. For example, claims 1, 3-8, 10-16 and 18 recite at least the first converting operation, whereas the remaining claims 2, 9 and 17 recite at least the second converting operation. Such features are clearly not taught or suggested by any of the references of record whether taken individually or in combination with each other.

Therefore, since the above described references fail to teach or suggest the above described features of the present invention particularly with respect to the first and second converting operations, it is submitted that all of the claims patentable over the above described references and the other references of record.

6. CONCLUSION

Applicant has conducted what it believes to be a reasonable search, but makes no representation that "better" or more relevant prior art does not exist. The

Patent Office is urged to conduct its own complete search of the prior art, and to thoroughly examine this application in view of the prior art cited herein and any other prior art that the Patent Office may locate in its own independent search. Further, while Applicant has identified in good faith certain portions of each of the references listed herein in order to provide the requisite detailed discussion of how the claimed subject matter is patentable over the references, the Patent Office should not limit its review to the identified portions but rather, is urged to review and consider the entirety of each reference, and not to rely solely on the identified portions when examining this application.

In view of the foregoing, Applicant requests that this Petition to Make Special be granted and that the application undergo the accelerated examination procedure set forth in MPEP 708.02 VIII.

7. Fee (37 C.F.R. 1.17(i))

The fee required by 37 C.F.R. § 1.17(i) is to be paid by:

☒ the Credit Card Payment Form (attached) for \$130.00.

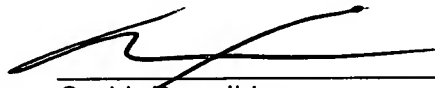
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Respectfully submitted,

MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.



Carl J. Brundidge
Registration No. 29,621

CIB/jdc
Enclosures